.NV Energy Reid Gardner Facility
Administrative Order on Consent (AOC) Implementation
Revised Site-Wide Conceptual Site Model (CSM) Process
January 25, 2010

Background

When the AOC was signed on February 22, 2008, the following objectives were agreed upon (Scope of Work, Appendix B, Section 2.0, page 1):

"The overall objective for the Scope is to provide a framework for the completion of characterization activities for groundwater and soil within the Site boundaries and for the identification and implementation of Corrective Actions applicable to each media as necessary. The common objective of all parties is to seek permanent Remedies for all media that address current and future risks to human health and the Environment."

The deliverables listed in Section 3.0 of the Scope of Work in Appendix B of the AOC were identified to meet the AOC objectives. These deliverables are listed below with their current status shown in parentheses:

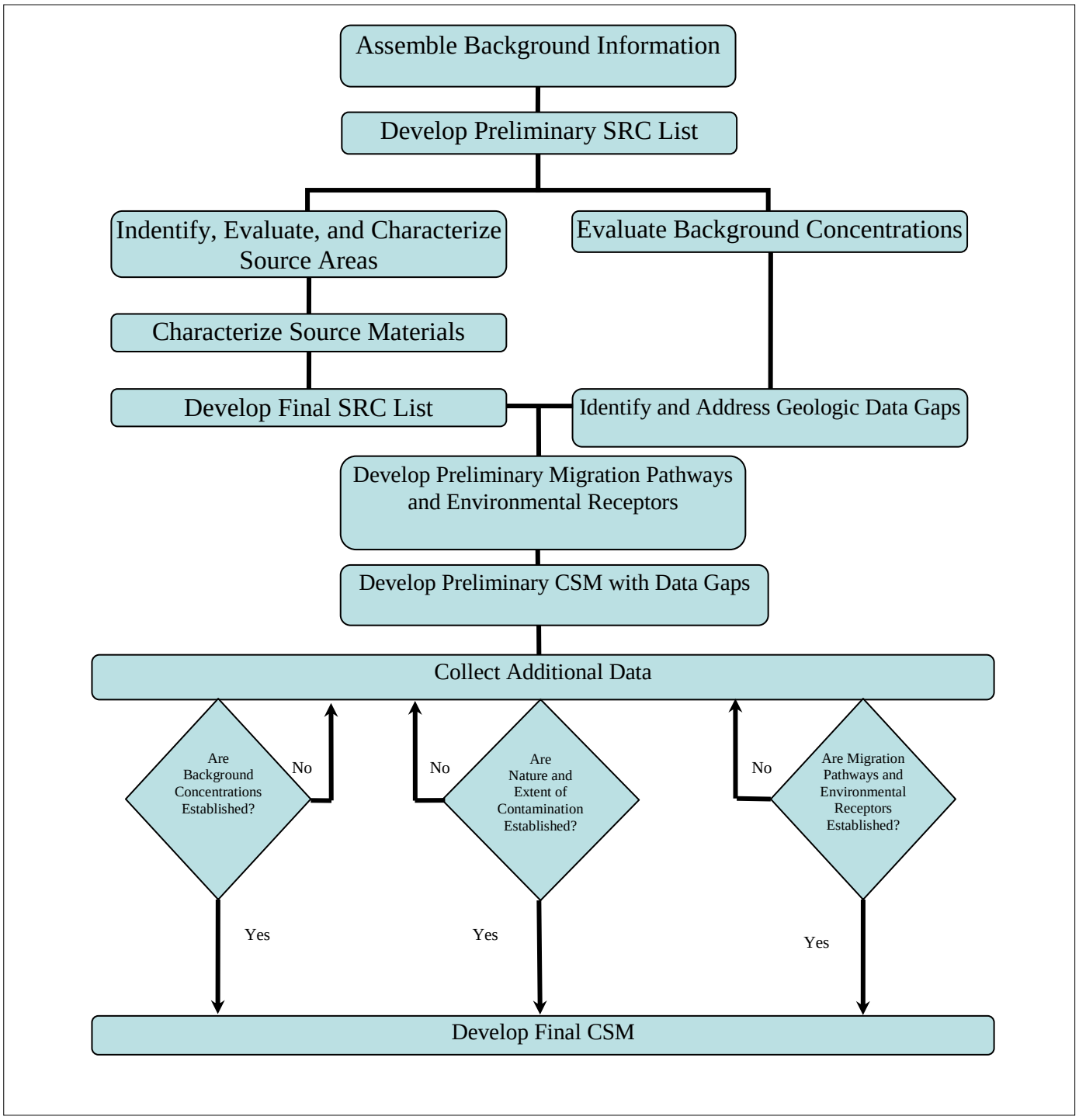
- Encyclopedia of Supporting Documentation (approved by NDEP)
- Document and Response to Comments Tracking System (approved by NDEP)
- Closure Plan (approved by NDEP)
- Health and Safety Plan (general HASP approved by NDEP; site-specific HASPs to be completed before each field activity)
- Progress Reports (being submitted quarterly)
- Evaluation of Background Conditions (Submitted to NDEP January 15, 2010)
- Site-Related Chemicals (SRC) Document (preliminary list approved by NDEP)
- Site-Wide Conceptual Site Model (March 18, 2009, workshop with NDEP discussed available information; approach discussed during June 11, 2009 quarterly meeting; future approach under discussion)
- Sub-Area Specific Work:
    - WMU-7 (Sampling and Analysis Plan approved by NDEP; sampling conducted in November 2009)
    - Diesel Impact to Soil (Sampling and Analysis Plan approved by NDEP; sampling conducted in November 2009)
    - Pond G solids removal (workplan approved by NDEP; solids sampling conducted in November 2009)
    - Pond D solids removal (workplan approved by NDEP; solids sampling conducted in November 2009)
- Data Validation Reports (future)
- Groundwater Modeling (may occur in future)
- Corrective Action Alternative Study (future)
- Corrective Action Plan (future)
- Implementation of Corrective Action Plan (future)
- Corrective Action Plan Completion Document (future)

Proposed Approach

While preparing deliverables required by the AOC, more has been learned about the Reid Gardner Station history, the results of previous investigations, and other information needed to evaluate the extent of environmental impacts by the station and possible corrective actions in the future. In addition, NDEP has suggested that NV Energy follow ASTM Standard E 1689-95 (reapproved 2008) *Standard Guide for Developing Conceptual Site Models for Contaminated Sites*. The following CSM approach is described in this standard; we have indicated the status of each step and which AOC deliverables relate to them:

- Assembling Information (essentially complete with the development of the Encyclopedia of Supporting Documentation and the review of applicable documents and historical aerial photos)
- Identifying Contaminants (Preliminary SRC list fulfills this requirement; analyte lists for particular areas may be reduced based on additional information)
- Establishing Background Concentrations of Contaminants (NV Energy is in the process of evaluating background conditions at the site, as noted above)
- Characterizing Sources (NV Energy is just beginning this effort)
- Identifying Migration Pathways (future)
- Identifying Environmental Receptors (future)

Based on the AOC deliverables, our review of the ASTM standard, and our current understanding of the site, we are proposing the approach to the site-wide CSM summarized in the following flow diagram and discussed in more detail below.


Assemble Background Information
Develop Preliminary SRC List
Indentify, Evaluate, and Characterize Source Areas
Evaluate Background Concentrations
Characterize Source Materials
Develop Final SRC List
Identify and Address Geologic Data Gaps
Develop Preliminary Migration Pathways and Environmental Receptors
Develop Preliminary CSM with Data Gaps
Collect Additional Data
Are Background Concentrations Established?
No
Yes
Are Nature and Extent of Contamination Established?
No
Yes
Are Migration Pathways and Environmental Receptors Established?
No
Yes
Develop Final CSM

Assemble Background Information – This effort is essentially complete through the preparation of the Encyclopedia of Supporting Documentation. As new information is identified, it will be added to the Encyclopedia of Supporting Documentation with periodic errata sheets submitted to NDEP. The site history developed based on reviewing appropriate documents was discussed in our March 18, 2009 workshop through the use of the Chronology of Events provided at the workshop and the historical aerial photographs reviewed. The site history will be summarized in the source document described below.

Develop Preliminary SRC List – The prelimary SRC list was already prepared and approved by NDEP. As discussed with NDEP, this list may be revised in the future based on further investigation.

Identify, Evaluate and Characterize Source Areas –Documents from the Encyclopedia will be used to identify potential sources of soil and groundwater contamination associated with the Station and the SRCs likely associated with them. Available soil and groundwater data from the identified source areas will be summarized. Additionally, documents from the Encyclopedia will be used to identify various materials that could be a source of soil or groundwater contamination (e.g., ash, salt, wastewater, etc.). Existing characterization data for these source materials will also be summarized. A Preliminary Source Identification Report will be prepared and submitted for NDEP review. This document will include the background information on the Station as well as available information on sources of soil and groundwater contamination. It is possible that the Preliminary CSM may identify additional sources/source areas.

Characterize Source Materials - A Sampling and Analysis Plan will be prepared for NDEP review and approval to characterize source materials for appropriate SRCs. This data will be used to evaluate what SRCs are likely to be present where a particular source material was/is present. A Source Material Characterization report will be prepared summarizing the results of the source material sampling activities.

Evaluate Background Concentrations – Concurrent with the source characterization activities, the Evaluation of Background Conditions Workplan will be finalized and implemented. The results of the background sampling will be used to evaluate background soil and groundwater concentrations and will be summarized in an Evaluation of Background Conditions Report. This information will be taken into consideration when developing analyte lists for source areas.

Develop Final SRC List - Based on the results of the source material characterization, the SRC list will be revised.

Identify and Address Geologic Data Gaps - The installation of new background monitoring wells will be the first opportunity for collection of detailed geologic data as part of the AOC implementation. The boring logs developed during the background well installations will be used to aid in the interpretation of other existing geologic data. Therefore, following implementation of the Evaluation of Background Conditions Workplan, existing geologic data will be reevaluated and geologic data gaps identified. A Geologic Data Gaps Workplan will be developed and submitted for NDEP review and approval.

Develop Preliminary Migration Pathways and Environmental Receptors - Following implementation of the Geologic Data Gaps Workplan, the site geology should be understood well enough to make a preliminary evaluation of pathways and receptors associated with sources of soil and groundwater contamination.

Develop Preliminary CSM With Data Gaps – Once the SRC list is final, sources have been identified, background concentrations have been evaluated, and site geology is better understood, there should be enough information available to prepare a Preliminary CSM with data gaps. This Preliminary CSM will be submitted to NDEP for review. Data needed to adequately characterize the nature and extent of soil and groundwater contamination will be identified along with data needed to evaluate pathways and receptors associated with sources of soil and groundwater contamination. Additionally, it is possible that additional sources/source areas may be identified during this step.

Collect Additional Data – Once NDEP has approved the Preliminary CSM with data gaps, a workplan (or workplans) will be submitted to address the identified data gaps. Specific analyte lists will be developed for individual source areas. Once the data gaps workplan(s) is approved by NDEP, additional data collection will take place.

Develop Final CSM – The final CSM will be prepared when the data gaps workplan(s) implementation is complete. No more data collection will be necessary when the following are all true:

- Background concentrations have been established
- The nature and extent of contamination is established
- Migration pathways and environmental receptors are established

For each identified source of soil and/or groundwater contamination, the pathways and receptors will be evaluated. Where there is a complete pathway that could result in exposure to receptor(s) at unacceptable levels, the need for corrective action will be identified. The AOC implementation will then proceed with Corrective Action Alternative Studies and Corrective Action Plans for those sources that need to be addressed by either eliminating pathways and/or reducing receptor risks to acceptable levels.